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MINOR STUDIES FROM THE PSYCHOLOGICAL LABORATORY OF VASSAR COLLEGE

XXIV. THE SPEED OF AFFECTIVE JUDGMENTS

By HELEN M. POTTER, RUTH TUTTLE, and M. F. WASHBURN

The object of this study was to compare the average times required to make the judgments 'indifferent,' 'pleasant,' 'unpleasant,' 'very pleasant,' and 'very unpleasant,' using colored papers as the sources of affective reaction, and measuring time with a stop-watch. A piece 2.9 cm. square was cut from each of the Bradley colors, and these pieces were laid one at a time on a sheet of white paper before the observer. In order that no time should be lost in looking for the piece of paper, it was always placed on a certain mark previously located by the observer. Her eyes were closed except when the signal was given to open them. The experimenter gave a 'Ready' signal as she put the piece of paper in place; when she said 'Now,' she started a stop-watch, and the observer opened her eyes and looked at the color. As soon as the observer expressed a judgment on the affective character of the color impression, the stop-watch was stopped. The usual series of numbers from one to seven was not employed to express the affective judgment. It seemed best to use a less finely graded scale, for with the seven-place scale there may be hesitation in any part of the scale as to just which number to use. Instead, we instructed our observers to decide simply whether a color was pleasant, unpleasant, or indifferent to them, but they were told that whenever a color struck them as *very* pleasant or unpleasant, they might record the fact. The judgments of extreme pleasantness and unpleasantness were by these instructions made more spontaneous, since there was ordinarily no obligation to decide on the degree of the affective tone. Ninety reactions were thus taken with each observer, and there were fifty-five observers, all young women college students.

For each observer the average reaction time was calculated for judgments of indifference, of extreme pleasantness, and of extreme unpleasantness. Through a misunderstanding, one of the two experimenters calculated the average reaction time for all the pleasant judgments including judgments of extreme pleasantness, and for all the judgments of unpleasantness including extreme unpleasantness, while the other experimenter found the average reaction time for judgments of extreme pleasantness, that for judgments of moderate pleasantness, that for judgments of extreme unpleasantness, and that for judgments of moderate unpleasantness, separately. Each experimenter worked with a considerable number of observers, and since either way of treating the results leads to the same conclusion, it was not thought worth while to reduce one set of numbers to the terms of the other set.

The results, then, were as follows:

Experimenter P. Thirty observers. The average of the average reaction times of *judgments of extreme pleasantness* was 1.2 seconds; the longest individual average was 1.5 seconds; the shortest individual average was .9 seconds. The average of the average reaction times

for *judgments of extreme unpleasantness* was 1.2 seconds; the longest individual average was 2.0 seconds, and the shortest .9 seconds. The average of the average reaction times for *all the judgments of pleasantness* taken together was 1.4 seconds; longest individual average 2.3, shortest 1. The average of the average reaction times for *all the judgments of unpleasantness* taken together was 1.4; longest individual average 2.5, shortest 1. The average of the average reaction times for *judgments of indifference* was 1.8 seconds; longest individual average 2.5, shortest 1.1.

Thus from the results of Experimenter P we find (1) that there is no difference whatever between the average time required for judgments of pleasantness and that required for judgments of unpleasantness; (2) that it takes on the average about .2 of a second less time to make a judgment of either extreme pleasantness or extreme unpleasantness than to make judgments of pleasantness or unpleasantness including both moderate and extreme grades; (3) that it takes about .4 of a second longer to make the judgment 'indifferent' than to make a judgment of pleasantness or unpleasantness.

Experimenter T. Twenty-five observers. The average of the average reaction times of *judgments of extreme pleasantness* was 1.3 seconds; the longest individual average was 1.9 seconds, the shortest .8 of a second. The average of the average reaction times for *judgments of extreme unpleasantness* was 1.3 seconds; the longest individual average was 2 seconds and the shortest .8 of a second. The average of the average reaction times for *judgments of pleasantness exclusive of extreme judgments* was 1.6 seconds; longest individual average 2.7 seconds, shortest .9 of a second. The average of the average reaction times for *judgments of unpleasantness exclusive of extreme judgments* was 1.6 seconds; longest individual average 2.4, shortest .9 of a second. The average of the average reaction times for *judgments of indifference* was 1.9 seconds; longest individual average 3.3, shortest 1 second.

From the results of Experimenter T it may be concluded (1) that there is no difference whatever between the average time required for judgments of pleasantness and that required for judgments of unpleasantness; (2) that it takes on the average about .3 of a second longer to make a judgment of moderate pleasantness or unpleasantness than to make an extreme judgment under either category; (3) that it takes about .3 of a second longer to make a judgment of indifference than to make one of moderate pleasantness or unpleasantness.

These results seem mutually confirmatory. That the averages are not misleading may be shown by a study of the individual results. For forty-six observers out of fifty-five the average reaction time for judgments of indifference was longer than any of the other averages, and for four of the remaining nine it was equal to the longest average. Twenty-four out of thirty observers gave shorter averages for judgments of extreme pleasantness than for judgments of both grades of pleasantness taken together, and seventeen out of twenty-five gave shorter averages for judgments of extreme pleasantness than for judgments of moderate pleasantness. Twenty-three out of twenty-nine observers gave shorter averages for extreme judgments of unpleasantness than for unpleasantness in general (one observer never made a judgment of extreme unpleasantness), and nineteen out of twenty-five gave shorter averages for extreme than for moderate judgments of unpleasantness. When we take into con-

sideration the roughness of the time measurements and the many sources of possible variation in the results, their uniformity appears to be significant.

There are two different points of view, at least, from which these facts may be regarded. On the one hand, it may be urged that the stronger the affective tone of a stimulus, the more motor energy it represents; hence we should expect a strong and prompt motor response from very pleasant or very unpleasant stimuli, a weaker one from stimuli of moderate affective tone, and a still weaker one from indifferent stimuli. Nakashima,¹ however, found that reactions involving affective tone take longer than ordinary cognition or discrimination reactions, a result which he ascribes to the lack of clearness as an attribute of affection. If this explanation be accepted it may be argued that extreme degrees of pleasantness and unpleasantness would possess in their intensity a kind of substitute for clearness, and so would give shorter reaction times than moderate degrees, but it might seem that we should be unable to account for the fact that judgments of indifference took regularly longer than judgments of pleasantness and unpleasantness. Of course, though, a judgment of indifference is a very different thing from a cognitive judgment about a stimulus that is as a matter of fact indifferent. In the latter case attention is not directed to the existence or non-existence of an affective tone; in the former case the problem is: Has this stimulus produced an affective experience or has it not?

A largely contributing factor to our results is probably the same law that makes associative reactions to ambiguous words slower than those to *eindeutig* words. The indifference judgments take longest because there are three alternatives more or less present to consciousness, namely, pleasantness, unpleasantness, and indifference; the judgments of moderate pleasantness and unpleasantness take fairly long because the possibility of the opposite judgment or of an indifference judgment still lurks in the background; while the extreme judgments are the shortest because there is no alternative possibility present at all to consciousness. The indifference judgments, further, probably take longer than the judgments of moderate pleasantness and unpleasantness because the Aufgabe involves the discovery if possible of an affective tone, and many observers feel that an indifference judgment means a failure to perform the Aufgabe, despite the fact that the instructions allow it.

The effect of practice rather than fatigue was apparent in most cases when the time of the first thirty reactions was compared with that of the last thirty. In forty-three out of fifty-five cases the last thirty reactions were quicker than the first thirty. Moreover, practice tended to level somewhat the differences between the averages for the different categories of judgment.

XXV. A STUDY OF AFFECTIVE CONTRAST.

By MARGARET M. BACON, ESTHER A. ROOD, and M. F. WASHBURN

The pleasure of an agreeable experience is heightened if it is preceded by a disagreeable experience, and an impression in itself unpleasant may be felt as pleasant if a more unpleasant state has been its antecedent. In like manner unpleasantness may be heightened or

¹ *Psychological Review*, vol. 16, 1909, pp. 303-340; *American Journal of Psychology*, vol. 20, 1909, pp. 157-193.